_____ 1. Solve the right triangle with the given information: $a = 3.5, b = 2.6$

A. $\alpha = 36.6°, \beta = 53.4°, c = 4.4$
B. $\alpha = 48.9°, \beta = 41.1°, c = 4.4$
C. $\alpha = 48.0°, \beta = 42.0°, c = 6.1$
D. $\alpha = 53.4°, \beta = 36.6°, c = 4.4$

_____ 2. Solve the right triangle with the given information: $a = 3.9, \beta = 43.5°$

A. $\alpha = 46.5°, b = 6.5, c = 5.4$
B. $\alpha = 46.5°, b = 3.7, c = 5.4$
C. $\alpha = 46.5°, b = 2.6, c = 4.7$
D. $\alpha = 46.5°, b = 6.5, c = 7.6$

_____ 3. Solve the right triangle with the given information: $a = 2.0, \beta = 35.0°$

A. $\alpha = 55.0°, b = 0.3, c = 2.0$
B. $\alpha = 55.0°, b = 1.4, c = 2.4$
C. $\alpha = 55.0°, b = 2.7, c = 2.4$
D. $\alpha = 55.0°, b = 2.7, c = 3.4$

_____ 4. Convert the angle to degrees, minutes, and seconds. 27.91°

A. 27°54' 36"
B. 27°54' 42"
C. 27°54' 91"
D. 27°54' 24"

_____ 5. Convert the angle to decimal degrees and round to the nearest hundredth of a degree. 210°29' 44"

A. 210.51
B. 210.46
C. 210.56
D. 210.50

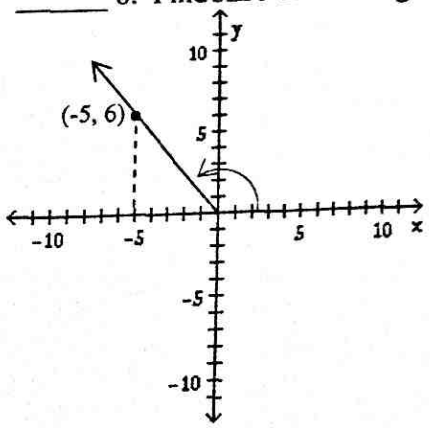
_____ 6. Find $\cos\theta$, given that $\sin\theta = \frac{1}{7}$ and $\cos\theta < 0$.

A. $-\frac{4\sqrt{3}}{7}$
B. $-\frac{6}{7}$
C. $\frac{4\sqrt{3}}{7}$
D. $\frac{6}{7}$

_____ 7. Find $\sin\theta$, given that $\cos\theta = \frac{2}{3}$ and $\sin\theta < 0$.

A. $\frac{\sqrt{5}}{3}$
B. $-\frac{\sqrt{5}}{3}$
C. $-\frac{\sqrt{13}}{3}$
D. $\frac{\sqrt{13}}{3}$

_____ 8. Find $\sin\theta$ for the angle shown.

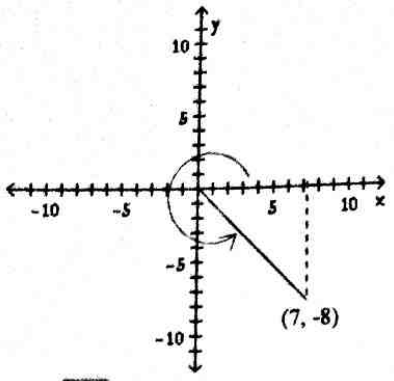


A. $-\frac{6}{61}$
B. $\frac{6}{61}$
C. $\frac{6\sqrt{61}}{61}$
D. $-\frac{6\sqrt{61}}{61}$

_____ 9. A 37-foot ladder is leaning against the side of a building. If the ladder makes an angle of 21° with the side of the building, how far is the bottom of the ladder from the base of the building? Round your answer to the hundredths place.

A. 18.96 ft
B. 14.53 ft
C. 13.26 ft
D. 3.89 ft

_____ 10. Find $\sec\theta$ for the angle shown.



A. $\frac{\sqrt{113}}{7}$ B. $-\frac{7}{8}$ C. $-\frac{8}{7}$ D. $-\frac{\sqrt{113}}{8}$

_____ 11. From a boat on the lake, the angle of elevation to the top of the dam is $35°19'$. If the dam is 2507 feet above the level of the river, how far is the boat from the base of the dam (to the nearest foot)?

A. 3529 ft B. 3519 ft C. 3509 ft D. 3539 ft

_____ 12. One rope pulls a barge directly east with a force of 82 N, and another rope pulls the barge directly north with a force of 59 N. Find the magnitude of the resultant force acting on the barge.

A. 141 N B. 101 N C. 4800 N D. 23 N

_____ 13. Two forces of 30 N and 70 N (newtons) act on an object. The angle between the forces is 43°. Find the magnitude of the resultant and the angle that it makes with the smaller force.

A. 93 N, 35° B. 8 N, 30° C. 94 N, 30° D. 95 N, 30°

_____ 14. Given are the vector magnitude (hypotenuse) and the angle θ. Use the information to resolve the vector into its horizontal and vertical components. $|v| = 197.9;\quad \theta = 63.9°$

A. horiz: 177.7; vert: 87.1
B. horiz: -177.7; vert: -87.1
C. horiz: -87.1; vert: -177.7
D. horiz: 87.1; vert: 177.7

_____ 15. From a balloon 754 feet high, the angle of depression to the ranger headquarters is $73°25'$. How far is the headquarters from a point on the ground directly below the balloon (to the nearest foot)?

A. 215 ft B. 230 ft C. 225 ft D. 220 ft

_____ 16. Convert the angle to radians. Leave as a multiple of π. $510°$

A. $\frac{17\pi}{3}$ B. $\frac{17\pi}{6}$ C. $\frac{17\pi}{12}$ D. $\frac{17\pi}{5}$

_____ 17. Convert the radian measure to degree measure. $\frac{10\pi}{3}$

A. $1200\pi°$ B. 10.47° C. 600° D. 300°

_____ 18. Add the following vectors in standard position. Round the magnitude and direction to the nearest whole number.

$100\angle 40°$

$150\angle 150°$

$200\angle 205°$

A. $241\angle -13°$ B. $241\angle 103°$ C. $241\angle 167°$ D. $235\angle 55°$